

WHAT IS CLAIMED IS:

1 1. A method of allowing packet-switched telephony subscriber to roam within a
2 packet-switched telephony network comprising:

3 sending a message from a subscriber terminal to a visited function in a packet-
4 switched telephony network, the message including a subscriber identification for the
5 subscriber;

6 the visited function sending a message to the subscriber's packet-switched
7 telephony network home function providing a packet-switched telephony network address
8 of the visited function in the as updated subscriber location information and the subscriber
9 identification;

10 the home function storing the network address of the visited function as location
11 information for the subscriber.

1 2. The method of claim 1 and further comprising:

2 receiving a call that is directed to the subscriber;

3 obtaining the location information for the subscriber from the subscriber's Packet-
4 switched telephony network Home Function including the network address of the visited
5 function;

6 routing the call to the subscriber terminal by establishing a packet-switched
7 telephony call towards the network address of the serving visited function.

1 3. The method of claim 2 and further comprising the step of forwarding the call
2 from the serving visited function to a subscriber terminal.

1 4. The method of claim 1 wherein the packet-switched telephony network address
2 of the serving visited function comprises an Asynchronous Transfer Mode (ATM) address.

1 5. The method of claim 1 wherein the network address of the serving visited
2 function comprises an Internet Protocol (IP) address.

1 ~~6.~~ A method of call delivery to a packet-switched telephony subscriber that is
2 roaming within a packet-switched telephony network comprising:

3 receiving a packet-switched telephony call at a packet-switched telephony home
4 function from a calling entity, the call including a subscriber identification identifying the
5 called subscriber;

6 the home function identifying subscriber location information including a packet-
7 switched telephony network address of a visited function corresponding to the subscriber
8 identification;

9 the home function providing the address of the visited function to the calling entity;

10 establishing a packet-switched telephony call from the calling entity towards the
11 address of the visited function.

1 7. The method of claim 6 and further comprising the step of the home function
2 communicating with the visited function to determine that the called subscriber can receive
3 the call prior to providing the visited function address to the calling entity.

1 8. The method of claim 6 and further comprising the steps of:
2 the home function communicating with the visited function to determine if the
3 called subscriber can receive the call; and
4 providing the visited function address to the calling entity only if the called
5 subscriber can receive the call; and
6 otherwise, if the called subscriber is unable to receive the call, the home function
7 returning an address corresponding to the subscriber where the calling entity may leave a
8 voice message for the called subscriber.

1 9. The method of claim 6 and further comprising the step of forwarding the call
2 from the visited function to the called subscriber.

1 10. The method of claim 9 wherein the step of forwarding the call from the visited
2 function to the called subscriber includes the step of forwarding the call as a packet-
3 switched telephony call to the called subscriber.

1 11. The method of claim 9 wherein the step of forwarding the call from the visited
2 function to the called subscriber comprises the steps of:
3 translating the packet-switched telephony call received at the visited function to a
4 format used by the subscriber terminal that is incompatible with packet-switched telephony;
5 forwarding the translated call from the visited function to the called subscriber
6 terminal.

1 12. The method of claim 6 wherein the visited function is provided on the called
2 subscriber terminal.

1 13. The method of claim 6 wherein said step of establishing comprises the steps
2 of:

3 sending call control signaling between the calling entity and the visited function to
4 set up the packet-switched telephony call; and
5 sending the media of the packet-switched telephony call directly from the calling
6 entity to the visited function.

1 14. The method of claim 13 wherein said step of sending call control signaling
2 comprises sending call control signaling directly between the calling entity and the visited
3 function to set up the packet-switched telephony call.

1 15. The method of claim 13 wherein said step of sending call control signaling
2 comprises sending call control signaling between the calling entity and the visited function
3 through the home function to set up the packet-switched telephony call.

1 16. The method of claim 13 wherein one address at the visited function is used for
2 call control signaling and media for the call.

1 17. The method of claim 13 wherein a first address at the visited function is used
2 for call control signaling to set the call up and a second address at the visited function is
3 used for media of the call.

1 18. The method of claim 17 wherein the second address at the visited function used
2 for call media is negotiated by the calling entity and visited function using the call control
3 signaling during call setup.

1 19. A method of call delivery within a mobile Packet-switched telephony network
2 comprising:

3 receiving a PSTN call at a gateway function, the call including a subscriber
4 identification of the called subscriber;

5 the gateway function obtaining from the subscriber's packet-switched telephony
6 home function subscriber location information for the called subscriber, the subscriber

7 location information including an address of a visited function corresponding to the
8 subscriber identification; and
9 establishing a packet-switched telephony call from the gateway function towards
10 the address of the visited function.

1 20. The method of claim 19 wherein said step of obtaining comprises the steps of:
2 sending an address request message including the called subscriber's subscriber
3 identification from the gateway function to the called subscriber's home function in the
4 packet-switched telephony network;
5 the home function identifying subscriber location information including an address
6 of a visited function corresponding to the subscriber identification; and
7 receiving a message at the gateway function from the subscriber's home function
8 including the address of the visited function corresponding to the subscriber identification.

1 21. The method of claim 20 and further comprising the step of the home function
2 communicating with the visited function to determine that the called subscriber can receive
3 the call prior to the gateway function receiving the message including the visited function
4 address.

1 22. The method of claim 19 and further comprising the step of forwarding the call
2 from the visited function to the called subscriber.

1 23. The method of claim 22 wherein the step of forwarding the call from the
2 visited function to the called subscriber includes the step of forwarding the call as a packet-
3 switched telephony call to the called subscriber.

1 24. The method of claim 22 wherein the step of forwarding the call from the visited
2 function to the called subscriber comprises the steps of:

3 translating the packet-switched telephony call received at the visited function to a
4 format used by the subscriber terminal that is incompatible with packet-switched telephony;

5 forwarding the translated call from the visited function to the called subscriber
6 terminal.

1 25. The method of claim 19 wherein the visited function is provided on the called
2 subscriber terminal.

1 26. The method of claim 19 wherein said step of establishing comprises the steps
2 of:

3 sending call control signaling between the gateway function and the visited function
4 to set up the packet-switched telephony call; and

5 sending the media of the packet-switched telephony call directly from the gateway
6 function to the visited function.

1 27. The method of claim 26 wherein said step of sending call control signaling
2 comprises sending call control signaling directly between the gateway function and the
3 visited function to set up the packet-switched telephony call.

1 28. The method of claim 26 wherein said step of sending call control signaling
2 comprises sending call control signaling between the gateway function and the visited
3 function through the home function to set up the packet-switched telephony call.

1 ~~29.~~ A packet-switched telephony network that supports mobility comprising:
2 a home function including a home function database storing current location
3 information and a subscriber profile for one or more subscribers; and
4 one or more visited functions, each visited function serving an area of the packet-
5 switched telephony network, each visited function providing the visited function address
6 to the home function in response to receiving a subscriber registration request, the home
7 function storing the address of the visited function as updated subscriber location
8 information.

1 30. The packet-switched telephony network of claim 29 further comprising a
2 subscriber terminal coupled to a visited function, the subscriber terminal providing a

3 registration request or update location message including a subscriber identification to the
4 visited function.

1 31. The packet-switched telephony network of claim 30 wherein said subscriber
2 terminal is coupled to the visited function via a wireline link.

1 32. The packet-switched telephony network of claim 30 wherein said subscriber
2 terminal is coupled to the visited function via a wireless link.

1 33. The Packet-switched telephony network of claim 31 wherein said subscriber
2 terminal is coupled to the visited function via a cellular link.

1 34. The Packet-switched telephony network of claim 30 wherein said subscriber
2 terminal is coupled to the visited function via a packet switched network.

1 35. The Packet-switched telephony network of claim 29 wherein at least one of said
2 visited functions comprises an access gateway for interworking or translating between
3 packet-switched telephony messages and messages sent between a subscriber terminal that
4 accesses the visited function using an access technique that is incompatible with the packet-
5 switched telephony network.